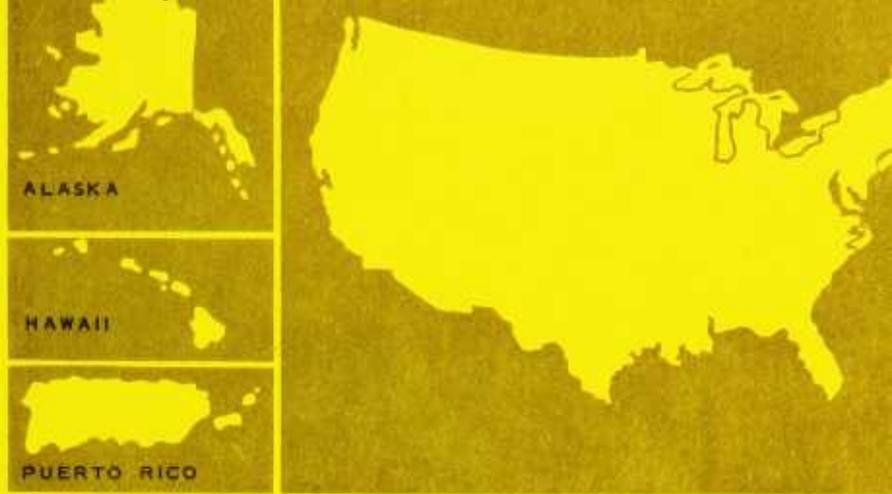


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**A HANDBOOK for
EXTENSION WORKERS**

**NATIONAL
COOPERATIVE
DAIRY HERD
IMPROVEMENT
PROGRAM**



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APPENDIX II—MEMORANDUM OF UNDERSTANDING

PREFACE

The Dairy Records Committee of the American Dairy Science Association (ADSA) has, for some time, felt that all facets of dairy record-keeping should be assembled in one publication. Such a guide would be invaluable to Extension workers to use in the development and execution of effective record programs. No single phase of an Extension dairy program is as vital to progressive dairying as is dairy record-keeping and the companion programs based on use of information records provide.

Plans for this publication were developed as a joint effort from the office of the Extension Dairyman, Federal Extension Service; The Agricultural Research Service; and the Dairy Records Committee of the American Dairy Science Association. Members of the Dairy Records Committee, with the assistance of others, prepared and assembled the material for this publication.

Members of the 1961–1962 Dairy Records Committee of ADSA were:

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NATIONAL COOPERATIVE DAIRY HERD IMPROVEMENT PROGRAM

I. ORGANIZATION AND RELATIONSHIPS

Background

The National Cooperative Dairy Herd Improvement Program is not something far removed from your State or located in some distant city. It is the dairy recordkeeping program with which you as an extension worker are involved from day to day.

The "national cooperative" aspect of the program developed over a period of years for several reasons. First, in 1935 the National Sire Proving Program was started. This phase of the National Cooperative Dairy Herd Improvement Program is the direct responsibility and under the direct supervision of the Animal Husbandry Research Division, Agricultural Research Service, U.S. Department of Agriculture. A nationwide activity such as sire proving demanded lactation records made under uniform rules and supervision. Thus, this was the first real need for a cooperative program between States and the USDA.

Second, a "national cooperative" program provided a means whereby comparable information could be made available by individual States and for the nation as a whole. These State and national summaries include such items as number of cows and herds enrolled in the various testing plans, herd sizes, production per

cow, cost of production, and feed information. When information is uniform among States it can be used much more widely in dairy extension work as well as for a source of valuable research data.

Third, a uniform program made it possible for States to use the same record forms and to cooperate in other ways in developing equipment, supplies and procedures. In the earlier years this was an important factor, as nearly all States used the forms supplied by the U.S. Department of Agriculture. During the last 10 years, with the development of automated data processing through State and regional computing centers, this situation has gradually changed. Now, with the exception of lactation reports, most States are providing their own forms. However, cooperation is still effective through the regional computing center in other ways.

Fourth, through the National Cooperative Dairy Herd Improvement Program approach it was possible to develop a unified "official testing" plan. This plan has been accepted by all of the dairy breed registry organizations and is known as "Dairy Herd Improvement Registry" or DHIR. In essence, this plan is operated and supervised under the same rules as Standard DHIA. Thus, a "cooperative program" has provided another tool to each individual State.

DHIA MEMORANDUM OF UNDERSTANDING

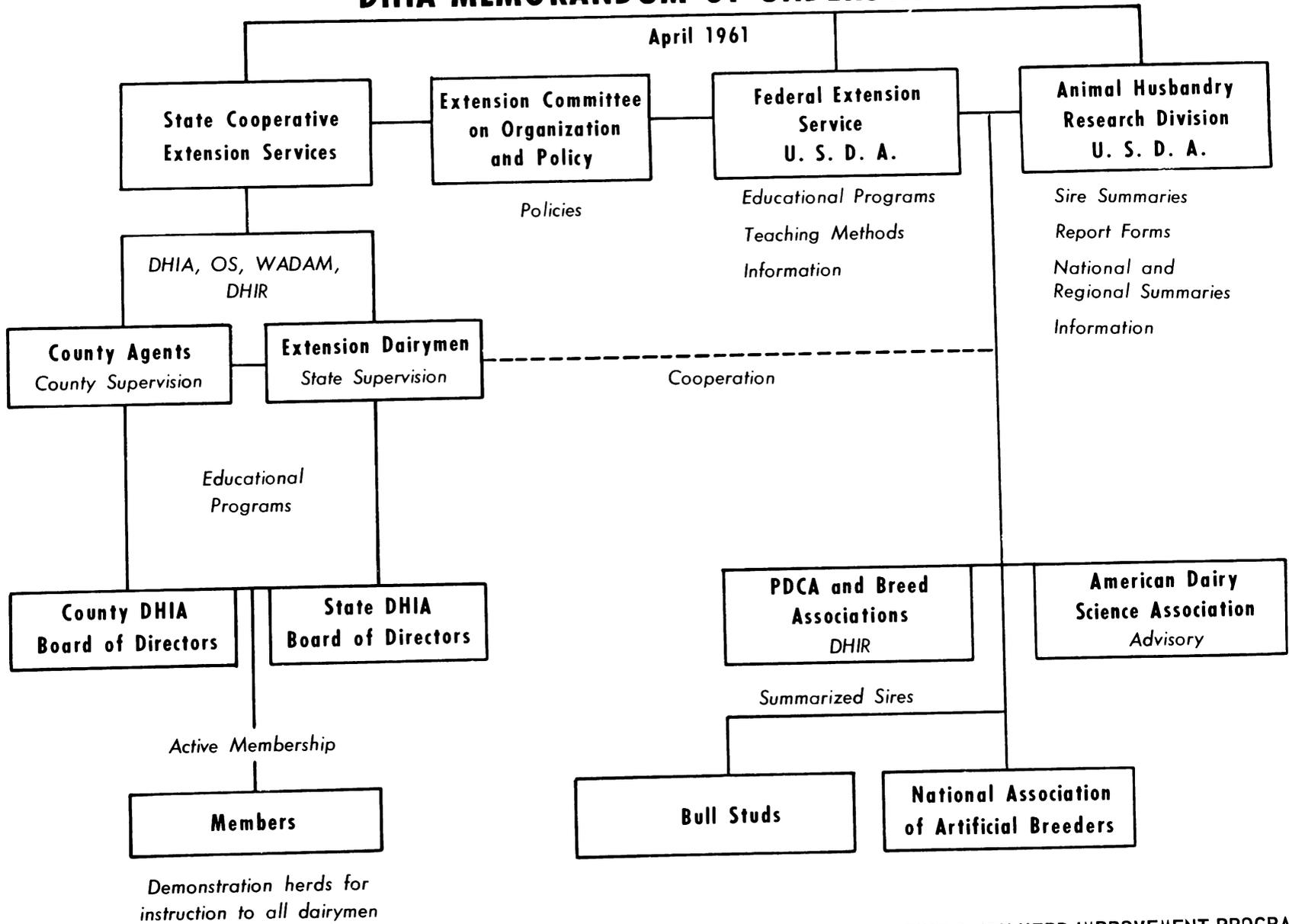


FIG. 1 - RELATIONSHIPS AND RESPONSIBILITIES RELATED TO THE NATIONAL COOPERATIVE DAIRY HERD IMPROVEMENT PROGRAM

Cooperating Parties

The National Cooperative Dairy Herd Improvement Program (including the National Sire Evaluation Program) is a cooperative undertaking between (1) a local DHIA of cooperating dairymen, (2) the Cooperative Extension Service, and (3) the Dairy Cattle Research Branch, a part of the Animal Husbandry Research Division of the U.S. Department of Agriculture, Figure 1, page 6, gives the flow chart of the cooperating parties as outlined in the Memorandum of Understanding.

Local DHIA. The primary purpose of a local DHIA is to afford the members an economical method of getting information they can use in improving the producing efficiency of their herds. Local associations are organized by dairymen and are operated as extension demonstration projects under the general supervision of extension workers. As extension demonstrations, they are effective in encouraging dairymen to adopt herd improvement practices.

A typical DHIA is an organization of 20 to 25 dairymen who employ cooperatively a supervisor or "tester" to keep records for them. A board of directors attends to the association business. The local county agent acts in an advisory capacity and cooperates with the State Extension dairyman in supervising the program. Countywide testing laboratories are operated in many States.

The local DHIA may be a community, county, or a multicounty association. In most States the DHIA is operated as a county unit. Many States have a State DHIA which is a federation of local associations. The direct responsibility of the program usually remains with each local DHIA. However, a State DHIA is valuable for (a) establishing State DHIA policies and rules, (b) coordinating the programs of local associations, (c) bringing about uniform enforcement of rules, (d) establishing standards of performance for supervisors, and (e) arranging for a statewide basis for compensation, liability insurance and social security for supervisors.

Cooperative Extension Service. More complete responsibilities are outlined in the Memorandum of Understanding which appears in the Appendix. State Extension Services have some flexibility in discharging these responsibilities.

County level. The primary functions of the county agent are as follows: (1) assist dairymen in organizing a DHIA, (2) act in an advisory capacity to the association, (3) cooperate with Extension dairymen in supervising the local program and (4) assist members in putting their herd records to work.

State level. The primary function of the State Extension dairyman is to assume the responsibility for the development and guidance of the National Cooperative Dairy Herd Improvement Program within his State, including the general supervision of all program activities. More detailed responsibilities may be found in the Memorandum of Understanding, which is included in this handbook as Appendix II.

Federal level. The primary function of the Federal Extension Dairyman is to serve as a liaison between the States, the Animal Husbandry Research Division, and the Extension Committee on Organization and Policy (a committee of State extension administrations). He should also arrange for an exchange of ideas, extension methods and other information among States.

Dairy Cattle Research Branch. The primary function of the Branch is to conduct a National Sire Evaluation Program based on data received from the cooperating States and to assist in coordinating the State Dairy Herd Improvement Program with the national program. The Branch acts in an advisory capacity to the States and compiles State, regional and national summaries. Research is conducted on the various aspects of the program.

Location of Dairy Cattle Research Branch

The Branch is located at the USDA Agricultural Research Center at Beltsville, Maryland. Correspondence with the Branch should be addressed to: Dairy Herd Improvement Section, Dairy Cattle Research Branch, Animal Husbandry Research Division, Agricultural Research Center, Beltsville, Md.

American Dairy Science Association. Even though the American Dairy Science Association is not a formal cooperating party in the National Cooperative Dairy Herd Improvement Program, this organization provided a vehicle through which the program has been developed throughout most of its history. The Dairy Records Committee of the ADSA helps establish uniform rules and policies for the program. The membership of the Committee includes State Extension dairymen and a representative from the Purebred Dairy Cattle Association. A representative of the Federal Extension Service acts as consultant and a representative of the Dairy Cattle Research Branch acts as an ex officio member. Recommendations of the Dairy Records Committee are acted upon by the Extension Section of the American Dairy Science Association. This section is made up largely of State Extension dairymen.

Authority

One way of explaining the National Cooperative Dairy Herd Improvement Program is to say that it is the sum and substance of 50 State programs. Since some uniformity is necessary, it becomes necessary to have an instrument whereby the responsibilities of the cooperating parties are agreed upon and put them into effect.

The instrument which does this important job is the Memorandum of Understanding among the Co-

operative Extension Service of each State, the Federal Extension Service, and the Animal Husbandry Research Division of the Agricultural Research Service in the United States Department of Agriculture.

The memorandum for each State is signed jointly by the Director of the Cooperative Extension Service, the Administrator of the Agricultural Research Service, and the Administrator of the Federal Extension Service. A copy of this memorandum appears as Appendix II.

II. EDUCATIONAL RESPONSIBILITIES

As an Extension worker, you need to understand the interrelated functions of the cooperative testing program: service, education, research and allied activities. Your educational approach will be somewhat different as you work with each area.

Service

The service area is concerned with the mechanics of the program; the routine details of getting the job done. This is a responsibility of the local organization, or in some cases, the State organization. It includes:

1. Employing a qualified supervisor. Usually the dairy specialist will certify an applicant's qualifications, but it is the responsibility of the local organization to employ him.

2. Establishing testing rates.

3. Providing standard equipment and supplies.

4. Collecting and disbursing all funds.

The Extension worker must respect the authority and status of the local DHIA. Although you may be accepted by the group, you must remember that you are not a member of the group. You should be an advisor: never a director. Group development should be one of your objectives when working with the DHIA in the conduct of its internal affairs.

Education

The primary role of the Extension worker is that of teacher. This fact is too often overlooked because of

the informal nature of the Extension education program.

The teacher attempts to change an undesirable situation by influencing the people who are involved in the situation. Therefore, your teaching objectives must be in terms of the specific; (1) audience, (2) changes in attitude, knowledge or skill desired in the audience, and (3) subject matter field.

Your objectives when working with the testing program might include:

1. Developing the strong leadership that is essential in DHIA groups.

2. Having participating dairymen gain greater understanding and knowledge of the value of their records, and develop greater skill in using this information for making management decisions. Much of the effort in this direction should be channeled from Extension specialists through well-trained agents who in turn work directly with dairymen.

3. Getting participating dairymen to acquire a greater appreciation of the importance of their records as research material. The results can improve the economic position of all dairying.

4. Changing the attitude of nonparticipating dairymen toward the need for production records.

5. Having DHIA supervisors acquire the knowledge and skills necessary for high quality performance of their duties.

6. Evaluating purposes—observing the results of approved practices under field conditions.

These are broad objectives, but they can give direction as you plan your activities in the testing program.

Research

The Extension worker must recognize how the DHIA program contributes to the broad continuum of research. There are two general levels:

1. Fundamental research—searching for basic truths.
2. Applied research—testing the application of basic truths under controlled conditions to determine which practices will be approved as sound.

These two levels are generally under the direction of the experiment station. The reporting system built into the cooperative production testing program is designed to provide data for evaluation purposes.

The flow of data starts on the cooperating farms, funnels through the various county agents and is pooled in the dairy Extension office. Monthly and yearly summaries of these records provide a wealth of dairy production teaching material. The specialist should give a high priority to the time necessary to organize this material. It is valuable and basic to carrying out his teaching objectives and to county agents in teaching programs.

Electronic data processing equipment can help analyze and summarize this data. Properly managed, this processing method can result in more teaching material and more time to disseminate the results.

The specialist has a further responsibility in the research area. He must forward certain of the assembled data to the Dairy Cattle Research Branch. Lactation reports are the foundation of the national sire summary program. Yearly herd records are summarized on a national basis and the results are made available to the States.

An important role of the Extension specialist is in evaluation. However, his closeness to field problems places him in an excellent position to counsel the experiment station on needed research.

Allied Activities

Your effectiveness is greatest when you involve others in a team approach. Other members on a dairy records team may include: specialists from allied subject matter fields, representatives of agencies and organizations with a primary interest in the dairy industry, representatives of dairy service, supply and marketing concerns, and informal lay leadership. Not only does this involvement help accomplish the primary objectives of the program, but it also promotes good public relations.

There are certain relationships that exist between the records program and other special interest, dairy centered programs. Four of these deserve special mention:

State Federation or Other Type of State DHIA. The main activities of this organization are service and guidance. Assistance given to this group in the form of leadership training will minimize the need for specialist time to administer the mechanics of testing. A strong State DHIA will also help the specialist carry out the educational objectives of the program.

Supervisor Training. A well-trained supervisor is essential to a dynamic testing program. Usually the specialist arranges for the initial training and for continuing training on the job. The quality of the supervisor's work determines the value of the records used by dairymen and Extension workers.

Artificial Breeding Program. Both DHIA and Artificial Insemination (AI) are directed toward dairy herd improvement. These differ in their relationship to the Extension Service.

Most artificial breeding concerns, like many other agricultural organizations, request some personal service assistance from the Extension Service. Most of these have outgrown the need for this kind of help. They have a service and a product to sell. They engage in active promotion and competition. Extension must not become involved in this type of activity.

The DHIA program is concerned with fact finding and decision making. It is noncompetitive. It is dedicated to education and is sponsored cooperatively by national, State and local agencies.

The Extension specialist can best serve the AI program by providing production record summaries for use by AI in sire selection and evaluation. AI will benefit directly from an effective Extension program. As dairymen realize the need for improved breeding they will turn to AI as the logical source of superior semen.

Official Testing. In most States, the specialist in charge of production testing is also the Superintendent of Official Testing. As such, he is responsible for supervising the conduct of breed sponsored tests and for authenticating the records. This is a cooperative arrangement provided by the college and the purebred dairy cattle organizations.

The breed clubs have in turn made these records available to colleges for research purposes. This cooperative effort has resulted in much valuable teaching material for dairy improvement.

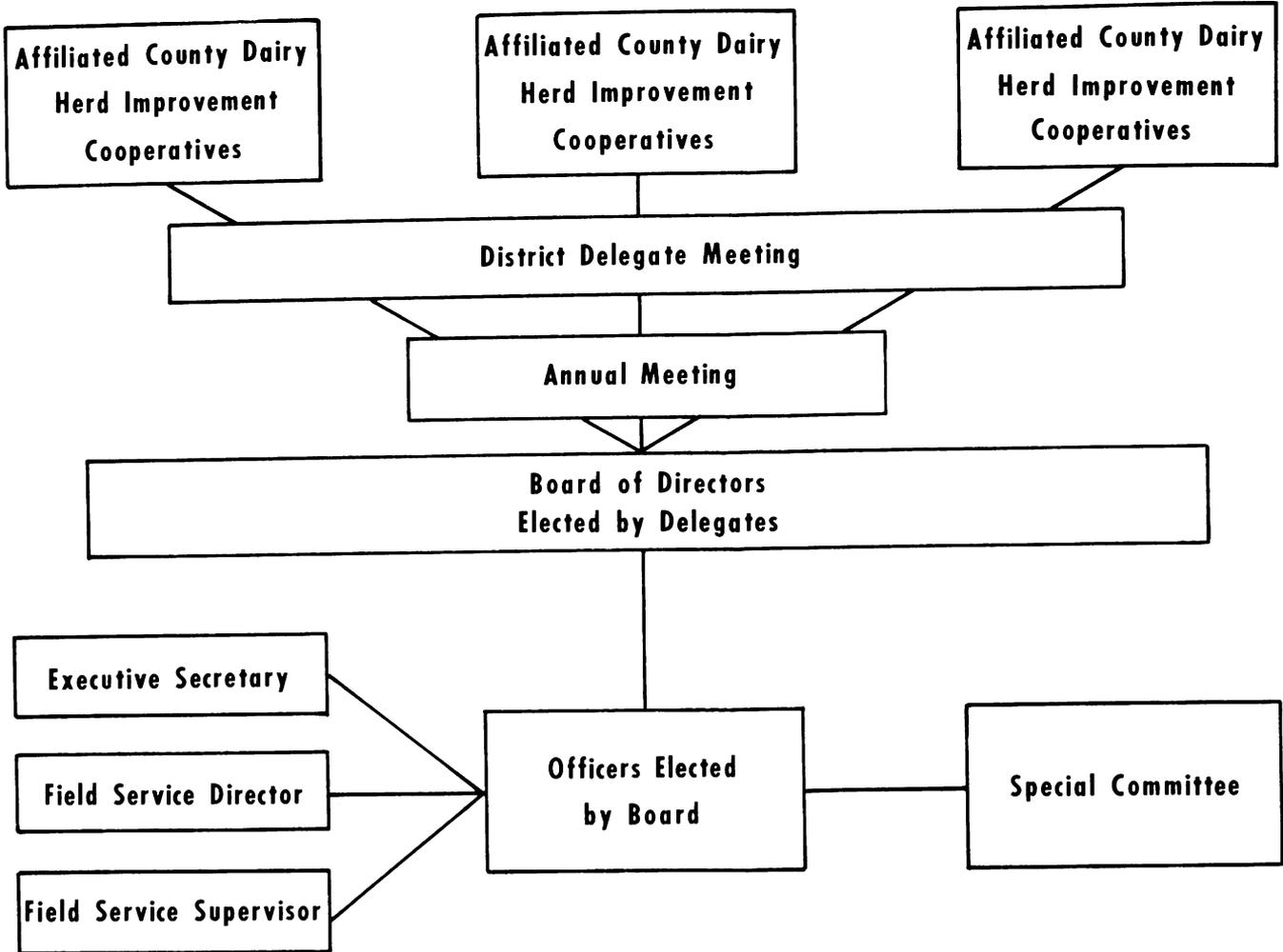


FIG. 2-ORGANIZATION OF A STATE DAIRY HERD IMPROVEMENT COOPERATIVE, INC.

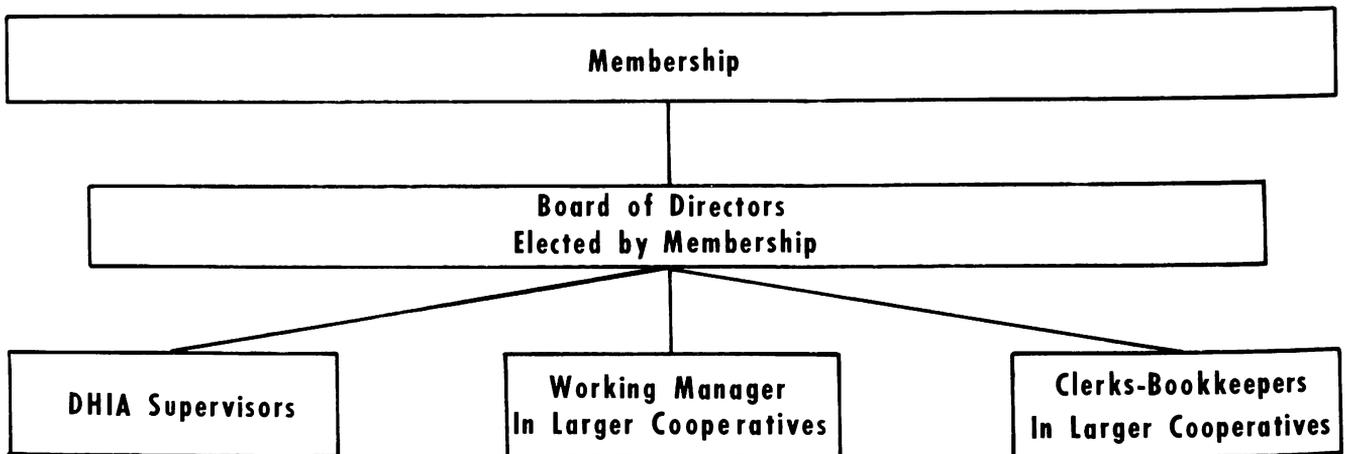


FIG. 3-ORGANIZATION OF COUNTY DAIRY HERD IMPROVEMENT COOPERATIVES

III. THREE RECORD PROGRAM PLANS

Standard Dairy Herd Improvement Association (DHIA) Plan

ORGANIZATION

Background Information. Ever since Dairy Herd Improvement Association work (formerly Cow Testing Association) was started in Michigan in 1905, it has been recognized as a basic dairy demonstration at the county, State, and national level. The Cooperative Extension Service became involved almost as soon as Extension work was formally organized in 1914, and by 1920 Extension was playing a leading role in promoting, organizing and using DHIA work as a dairy demonstration.

The basic method for calculation of DHIA records, using one test day each month as a sample for estimating the production for each testing period, was established by Helmar Rabild, the first DHIA supervisor. Mr. Rabild was later employed by the Dairy Division of the Bureau of Animal Industry to help promote and organize cow testing work in other States. The Dairy Division printed and furnished DHIA forms to help States get started and to establish uniformity in methods.

Uniformity of forms, methods and rules has evolved over the years under the leadership of the Dairy Cattle Research Branch working closely with the Extension Section of American Dairy Science Association. The present loose-leaf Herd Record Book, together with the necessary barn pages and reporting forms, was established in 1945. See Table I, page 26. However, some States continue to print their own forms and modify the content of their programs, particularly in the areas of feed records, value of product and income over feed cost.

One of the original concepts was that an approved, qualified DHIA supervisor (cow tester) employed by the membership organization would supervise the weighing, sampling, testing and verify the test day data. In most cases the DHIA supervisor calculated and recorded the data on forms provided by the State Extension dairyman or other agency supervising the program. Countywide testing laboratories developed in Washington, Wisconsin, New York and other States between 1940 and 1950. Laboratory testing and record calculation added much to the integrity and accuracy of the records.

Central Automated Data Processing (ADP), of DHIA records developed during the 1950's. Utah made the initial start in 1951 followed by Michigan, Illinois and New York. Today Dairy Record Processing Laboratories are operating on a regional basis in New York, North Carolina, Iowa, Ohio, Utah, and Washington. The States of Pennsylvania, Illinois, Michigan and Wisconsin each have their own laboratories. Central processing has been another big step forward in improving the accuracy and usefulness of the DHIA. Not only do the members get more and better information, but the records are more readily available for research and Extension studies. More research was done on population genetics of dairy cattle between 1955 and 1962 than in the previous 50 years. By 1962 several States were 100 percent converted to central processing and approximately 50 percent of all DHIA records were being processed by automated data processing equipment of some type. It seems only a matter of time until all records are on this system.

Pounds of milk, percent butterfat and pounds of butterfat summarized monthly and yearly were the original basis of DHIA production records. This was largely because the butter market was the chief cash outlet for milk. The Babcock test for butterfat was the first practical quality test available. Interest in solids-not-fat (S.N.F.) and protein testing is here, and it is likely that one or both of these will be added to the program in the future.

DHIA Organizations. Cooperating dairymen have been organized into associations, testing units, or cooperatives to facilitate the conduct of the program at the county and State levels. The pattern of organization and the delegation of responsibility and authority has varied among the States. It is ever changing to meet new situations and new developments in methods and procedures. Figures 2 and 3, page 10, show a typical State and county organization. A mimeograph, "Information Relating to the Organization of State-Wide Dairy Herd Improvement Cooperatives," is available from the Dairy Cattle Research Branch, USDA.

State Extension dairymen in charge of DHIA will find themselves involved as much in cooperative organization, business administration, labor relations and parliamentary procedures as they are in subject matter relating to feeding, breeding, herd management and processing of records. Fortunately, they can get assistance from other specialists. However, they must be reasonably familiar with the State cooperative laws, Federal and State taxes, insurance requirements, etc. Tables 5 and 6, pages 31 and 32 give a brief resume of these areas.

Regardless of the type of organization, it needs to maintain a definite system of membership and financial records. Table 7, page 33, suggests some basic records in this area.

Activities and Responsibilities. These activities and responsibilities are outlined in the Memorandum of Understanding. The dairymen participating in the program assume through the established organization such responsibilities as are delegated through memoranda, constitution and bylaws, or other types of agreements. These usually include:

- a. Local costs including DHIA supervisor wages.
- b. Employment of approved, qualified DHIA supervisors and other personnel.
- c. Enforcement of DHIA rules.
- d. General business and other administrative activities.
- e. Approval of membership.

TWO METHODS OF RECORD CALCULATIONS

Hand-calculated DHIA Records. While the transition to central processing of DHIA records is completed in a few States and is moving rapidly in others, a few States and some counties are likely to have hand-calculated DHIA records for quite a few years.

Individual herd forms. Most States continue to use the Federal forms and the multiple-ring Herd Book. These are outlined in Table 1, page 26. Some States supplement these with State and county forms. The use of these Federal forms is limited to bona fide DHIA members except for teaching and training purposes. Distribution, at no cost, is made by the Dairy Herd Improvement Section, Dairy Cattle Research Branch, to the State Extension dairyman in charge of DHIA. The State Extension dairyman in turn furnishes the forms to county DHIA organizations, usually through the county agricultural agent. Regardless of the method of distribution, it is the responsibility

of the State Extension dairyman to insure that the forms are used only for their intended purpose. Directions for completing the forms are given in the DHIA Supervisors' Manual (Agricultural Handbook 96).

Reports from the field. Two basic reporting forms, DHIA-718 (DHIA Production Report) and DHIA-780 (Yearly Herd Summary), are used by the DHIA supervisor to report data. Form 718 is used to report the production of individual cows for the first 305 days of the lactation period. Form 780 is used to report year herd totals and averages for the testing year. These are returned to the State Extension dairyman, usually via the county agricultural agent or DHIA supervisor. The State Extension dairyman, after making such tabulations or summaries as he desires, forwards both of these reports to the Dairy Cattle Research Branch. See the DHIA Supervisors' Manual for complete details. See Reporting Forms, Table 1, page 27.

The State Extension dairyman is usually asked to summarize the volume of work in his State and make a report to the Dairy Cattle Research Branch in January of each year.

Many States have special reports such as monthly supervisor reports, surveys, etc., which they use to keep in touch with the status of DHIA work in each county.

Summarization of results:

a. National sire evaluation program. The Dairy Cattle Research Branch periodically summarizes DHIA natural service and AI sires when sufficient data has been reported on production reports (DHIA 718's or DHIA 1095's). These summaries are returned to the State Extension dairymen for distribution to county agricultural agents, herd owners and AI organizations on DHIA form 1202—USDA—DHIA Sire Summary Record.

b. State and county association summaries and other tabulations. Each year the Dairy Cattle Research Branch summarizes the results from the DHIA 780's by States and counties. In addition, various tabulations of other factors related to production are made. Some States provide county summaries and result studies.

c. Research. Some States and USDA make all DHIA records available to their research workers for studies in breeding, feeding and herd management. This is one of the basic purposes of the DHIA program. Scientific analyses of results are more meaningful and useful in the long run than mere tabulations or types of data.

Machine-calculated DHIA Records, Automated Data Processing. The basic difference with automated data processing of DHIA records is that the DHIA supervisor records the test day data on a special reporting form (Barn Sheet) and forwards the report to a designated Dairy Records Processing Laboratory instead of calculating and recording the records in the Herd Record Book. The Dairy Records Processing Laboratory calculates and prints the completed record, usually with a stored program and automated data processing equipment. This may be of the punch-card or tape-input-output type. The completed record (Monthly Report) is mailed directly to the herd owner. A pre-listed Barn Sheet is prepared at the same time for the DHIA supervisor to use the next month.

It is obvious that Automated Data Processing drastically changes the supervisor's job for these reasons:

- Routine book work and hand calculations are eliminated for the most part.

- Mathematical and copying errors are reduced.

- Organization and legibility are improved.

- More information can be provided to the herd owner.

- Standardization and completeness are assured.

- The DHIA supervisor can test more cows if DHIA and Owner-Sampler testing are combined in each circuit.

- Careful editing (checking) of reports must be done.

A well-equipped Dairy Records Processing Laboratory requires large volume (150,000–200,000 cows) to operate efficiently and at reasonable cost. Fortunately regional processing centers can solve the problem for many States. Some States have solved this problem by using Automated Data Processing installations on a part-time basis.

Centralization also brings some problems with it. First of all, programs, forms, data reporting, methods used, etc. must be standardized at least within laboratories or regions. The individual State Extension dairyman becomes more of a coordinator. Routine reporting of completed lactations, 305-day records, yearly herd summaries, etc., are done by the laboratory. While DHIA data is more usable on a mass basis for research and Extension studies, individual data is less available. This will be even more so on a tape system. It means that State Extension dairymen must be satisfied with standardized reports, summaries and studies which are done on a scheduled basis. Special studies

will need to be programmed and scheduled well in advance of when they are needed. Communication among the laboratories, State Extension dairymen, county agricultural agents, DHIA supervisors and members becomes a major problem.

Each State Extension dairyman must become thoroughly familiar with the program and operational procedures of the Dairy Records Processing Laboratory through which his records are processed. This calls for conferences, training meetings and clearcut lines of communication. Most regional groups do have conferences and workshops. Full participation on the part of each State Extension dairyman is important.

Forms for Herd Record Books, Barn Sheets. The format of the Monthly Report and the Barn Sheet have been developed through the National DHIA Computing Center Workshop. Each Dairy Records Processing Laboratory provides its own forms. Pooling of orders by laboratories using the same form has resulted in considerable savings. There is considerable variation in format among the laboratories and States, but the basic approach and use of the forms is the same.

The Lifetime Record of Individual Cow (DHIA 1057) is available from the Dairy Cattle Research Branch, but several States have their own version. Dividers, DHIA 50, 51, and 52, are provided by the Dairy Cattle Research Branch, but each State or regional laboratory must print its own herd book fillers. Table 2, page 28, outlines the forms in general use.

Reports. Yearly herd averages, 305-day and complete lactation records, are reported to the various agencies involved by punch cards, tapes, or listings. These are shown in Table 3, page 29.

Supplemental material. Additional forms for corrections, recording data in the barn, manuals, etc. are listed in Table 4, page 30.

HERD CODE NUMBERING SYSTEM

Herd Codes. In order to handle and process individual dairy production records in volume and be able to satisfactorily identify the herd in which the record was made, each herd must have a herd code number.

A uniform herd code numbering plan has been developed that will accurately identify *each herd* and at the same time *indicate the type of record* being kept in the herd.

The herd code number consists of 8 digits. For example:

1. For Standard Dairy Herd Improvement Association records, the herd code would be as follows: 27-01-0001. This number indicates the following:

State	County	Standard DHIA	Herd number within county
27	01	0	001

The first digit after county number for Standard DHIA testing can run from 0 through 6, and indicates Standard DHIA record-keeping. See 2 below for use of the 6 as the first digit after county number.

NOTE: Herd codes now assigned to Standard DHIA herds *can continue* to be used by simply placing a "zero" in the front of the present three-digit number now used to indicate the herd within the county.

2. The only time 6 is used as the first number after county number in a Standard DHIA herd code is when a herd is one of several owned by the same owner. If a herd is to be divided into several herds, the last three numbers can be in whatever sequence is determined in the county, but the first digit after county should be a 6 for every herd. An example follows:

State	County	Standard DHIA, one of several herds of same owner	Herd number within county
27	01	6	001
27	01	6	024
27	01	6	025

The above example assumes that the herds shown were managed as one herd, number 27-01-0001 for some time, then were divided into three herds after herd numbers 27-01-0002 through 27-01-0023 had been assigned in the county.

3. For Owner-Sampler records, the herd code number would be as follows: 27-01-7001. This number indicates the following:

State	County	Owner-Sampler	Herd number within county
27	01	7	001

The first digit after county, number "7", indicates Owner-Sampler recordkeeping.

4. For Weigh-a-Day-a-Month records, the herd

code number would be 27-01-8001. This number indicates the following:

State	County	Weigh-a-Day-a-Month	Herd number within county
27	01	8	001

The first digit after county number will be "8" for Weigh-a-Day-a-Month recordkeeping.

5. For herds on DHIR test, the first digit after county number will be changed from the original number to "9". For example if a herd with a code number 27-01-0001 begins DHIR testing, its number would change to 27-01-9001. Some processing laboratories do not change to the "9" for DHIR herds.

Assignment of Herd Codes

1. By the State Extension dairyman: Herd codes for herds on Standard DHIA test and herds on test in Owner-Sampler testing *should both be assigned by the State Extension dairyman*. At the time the State Extension dairyman assigns the herd codes, it is suggested that he should (1) set up a *ledger record* in which to list by county, by herd code numbers, *in numerical order*, the name and address of the farmers, thereby eliminating the possibility of assigning a herd code to more than one herd, and (2) fill out the *file card* (DHIA 1108) listing the name of herd owner, his mailing address and herd code number for filing in alphabetical order.

These two files—the ledger record and the card record—will provide cross-reference files so that the herd code record may be readily referred to by either number or herd owner name.

Herd codes must never be reassigned if identification of herds in which the records are made is to be maintained. Example: John Doe is assigned herd code 27-02-0020. As long as John Doe is a member of Standard DHIA, his herd records and his cows' 305-day lactation records are reported and placed on file carrying his herd code number 27-02-0020. Should John Doe drop out of DHIA, his code number must be dropped and never reassigned to a new member. Thus, as long as records from John Doe's herd are on permanent file, they will be definitely identified as having been made in herd 27-02-0020.

2. By the county agricultural agent: It is suggested that the Weigh-a-Day-a-Month herd codes be assigned and recorded by the office of the county agricultural agent. The office of the State Extension

dairyman would assign each county the first *five* digits of the herd code number to be used in each county.

Assigned by state office			Assigned by county office
State	County	Weigh-a-Day-a-Month	Herd number within county
27	01	8	001

The county office would assign the last *three* digits for each herd code. In the county a simple ledger record of herd codes should be established to record in numerical order all herd codes assigned.

Where WADAM records are processed in a central computing laboratory, codes may be assigned at the central laboratory.

DAIRY HERD IMPROVEMENT LETTER

Issued monthly by the Dairy Cattle Research Branch, this letter contains current and related information regarding the DHIA program. DHI letters are sent to a mailing list including teaching and research staff members of agricultural colleges and experiment stations, State Extension dairymen, county agents, DHIA officials, DHIA supervisors, breed organization officials, dairy leaders and others having a special interest in the DHIA program. Periodically, at intervals of from 1 to 3 years, the mailing list is sent to the State Extension dairyman in each State for revision.

Owner-Sampler Plan

BASIC ORGANIZATION STRUCTURE

The Owner-Sampler (OS) record-keeping program is offered by some DHIA organizations or cooperatives that provide Standard DHIA record-keeping. Dairymen on the OS plan are full members in the DHIA organization and are entitled to hold leadership positions such as officer or director.

OS does not require direct supervision by a trained technician since test-day data and milk samples are obtained by the dairyman himself. Samples and data are either delivered to or picked up by a trained

technician or central laboratory that runs butterfat tests and processes the monthly data.

Since OS requires no on-the-farm supervision, associations with low income from DHIA tested herds may be able to increase total income by adding OS herds. Since DHIA supervisors can service several OS herds as well as one Standard DHIA herd daily, adding OS herds provides more funds to hire better qualified DHIA supervisors, maintain better equipment, and operate more efficient associations.

METHODS OF RECORD CALCULATION

Hand-calculated Records.

1. Individual herd forms. The forms used in OS testing vary between States since some States, such as Wisconsin, have developed their own herd forms.

Many States use herd forms DHIA-OS-2 and DHIA-OS-2A secured from Dairy Cattle Research Branch, USDA. These forms are distributed by the State Extension dairyman.

Yearly Summary forms are desirable and are developed and distributed by the States. Individual cow lifetime production pages should be a vital part of the OS program. Form DHIA-1057, properly labeled, or similar State-developed forms can be used.

Cow records should be kept on a *lactation* basis and herd records on a yearly basis.

2. Reports from the field. Yearly Herd Summary (Form DHIA 781) gives the herd totals and averages for the testing year. These forms are supplied by the Dairy Cattle Research Branch, USDA, and are distributed by the State Extension dairyman.

Form DHIA 781 is returned from the field to the Extension dairyman who forwards it to the Dairy Cattle Research Branch, USDA.

Machine-calculated Records.

1. Individual herd forms. Two types of record forms are used.

a. Forms identical to Standard DHIA. Most States and processing centers use forms identical in content to Standard DHIA machine-processed records. Forms are identified as Standard or Owner-Sampler DHIA records. Some States use the same form but use different colors to distinguish the records. Blue is the recommended OS color.

In all cases forms are supplied by the processing center and distributed in the same manner as Standard DHIA machine-calculated records.

b. State or processing center developed forms. OS records are processed in some centers on specially designed OS forms that are simpler than those used in Standard DHIA calculation.

2. Other forms used.

a. Summary and tabulation. Some processing centers furnish the same summaries and tabulations for OS as is furnished for Standard DHIA.

b. Use forms. Individual cow lifetime production pages, monthly herd summary and herd registry pages have been developed by some States for use by OS herd owners.

RESTRICTIONS ON USE OF OS RECORDS

Owner-Sampler records can provide interesting materials when summarized in various forms. These records certainly provide a basis for assisting the dairyman with the herd management decisions with minimum cost.

Owner-Sampler association averages are computed and published yearly. No publicity is given to individual herds on a State level. Each county agent is supplied with a complete list of all Owner-Sampler herd averages annually for his use in evaluating county programs.

It is generally agreed that individual Owner-Sampler records should not be used for publicity and advertising. However, since these are private records, there does not seem to be any means of enforcement. Therefore, it seems most desirable to see that Owner-Sampler records are so labeled. The DHI associations and Extension personnel can help educate dairymen and buyers that this is an unsupervised record. Reliability depends entirely on the thoroughness and integrity of the dairymen.

PERSONAL CONTACTS ESSENTIAL FOR OWNER-SAMPLER GROWTH

Since the DHIA supervisor does not take test samples, he has less contact with the dairyman. It is essential that the dairyman be carefully instructed on how to mix and sample the milk and to report complete and accurate data. It is also important that the DHIA supervisor or someone on the Extension

staff reviews the monthly report with the dairyman soon after he starts testing. Many "drop-outs" could be avoided if this contact were made.

After the dairyman is well oriented, understands the procedure and knows where to find information, frequent contacts by the county Extension personnel are very desirable.

Although DHIA supervisors are often rushed, they should plan to spend a few minutes visiting and answering questions for the dairyman. This monthly contact must be maintained if the association expects the Owner-Sampler membership to grow.

EXPANDING THE RECORDS PROGRAM

The factors limiting expansion of the record-keeping program are usually time and qualified personnel. The development of the central testing laboratory during the 1940's and central processing or "machine record" in the 1950's have been major steps toward solving these problems.

These changes have freed the supervisor from time-consuming routine work so that he is able to work with more dairymen in an area of the records program where he is most useful and effective. This helps the DHIA supervisor earn more in direct relation to his efforts and the quality of his service. This arrangement provides for an almost unlimited and orderly expansion of the testing program, primarily adding supervisors as requests for supervised DHIA warrant new personnel. Where testing laboratories are maintained, lab technicians can take care of the testing and the supervisors can pick up additional herds with only a few extra miles of travel.

WADAM Plan

BASIC ORGANIZATION AND STRUCTURE

The Weigh-a-Day-a-Month Plan is a low-cost milk-recording service that gives all dairy farmers an opportunity to participate in a recordkeeping system, in order to improve their efficiency of production and increase their income. It is a part of the National Co-operative Dairy Herd Improvement Program and

supplements and complements the other two plans—Standard Dairy Herd Improvement and Owner-Sampler.

In the county this organization ranges from one or two dairymen dealing directly with their county agent, to many cooperators enrolled as a part of the county organization responsible for all three plans of the National Cooperative Dairy Herd Improvement Program. Where few herds are involved, the county agent would arrange for the calculation of records. In counties with cooperators in two or all three of the plans, the calculations would probably be made by a supervisor. In some States the WADAM records are being machine calculated, either in the State or by regional processing centers.

The WADAM Plan makes recordkeeping available to every dairyman in the State or Nation. Unlike either DHIA or Owner-Sampler, it does not depend upon securing a sufficient number of cooperators to make it possible to employ a supervisor.

FORMS—SOURCE OF SUPPLY AND USE

DHIA-WAD-3 and DHIA-WAD-3A with snap-out carbon is available to Extension dairymen from the Dairy Cattle Research Branch of the USDA. This form is used by the dairyman for reporting data, by the computing center for recording results and is then returned to the dairyman for his permanent record.

States and processing laboratories where WADAM records are being machine calculated have developed their own forms.

Some States use individual cow pages to help dairymen make greater use of WADAM records. State developed cow pages or the DHIA 1057, properly labeled, are used. Much of the use of records material used with DHIA and OS programs can be adapted to WADAM testing.

REPORTS—MAKING AND DISTRIBUTING

WADAM records on individual herds are not given publicity. A yearly summary is requested for each herd for use by the Extension dairyman and the USDA in appraising the program. This information is reported on Form USDA-WAD 782.

USE OF WADAM RECORDS IN SUMMARIES AND RESTRICTIONS AS TO PUBLICITY OF RECORDS

The herds and cows enrolled in the WADAM program are included in determining the extent of participation of dairymen in a county or State in the National Cooperative Dairy Herd Improvement Program.

Production records of individual cows or herds are not used in publicity. The average production of several herds is frequently used to publicize results that have been obtained by those participating in the program.

IV. OFFICIAL TESTING

Official testing programs are carried on by the dairy breed registry organizations in cooperation with personnel of the Land Grant College in each State. Production records of cows tested in these programs are published in the Performance Register books of the breed organizations. They are used in such breed improvement programs as sire evaluation, dam recognition, breeder recognition, leading herd averages and leaders' lists of lactation records.

Programs

Three kinds of official testing programs are offered to owners of registered dairy cows. The detailed rules for these programs are contained in the Unified Rules for Official Testing, published by the Purebred Dairy Cattle Association, PDCA, which is made up of the five dairy breed registry organizations.

DAIRY HERD IMPROVEMENT REGISTRY (DHIR)

This is the newest, and the most popular, of the official testing programs. It was developed in the late 1950's by the dairy breed organizations and the American Dairy Science Association. Under this program, all cows in the herd must be tested, and the herd records must be computed electronically in a State or regional Central Processing Laboratory. Completed records and 305-day lactation records are forwarded to the breed organizations by the Central Processing Laboratories, for which the Laboratories are reimbursed by the breed organizations.

The DHIR rules require that the DHIA rules be followed and also provide for some additional verification of the records, such as extra surprise tests.

HERD IMPROVEMENT REGISTRY (HIR)

This program dates from about 1930. It requires the testing of all registered cows in the herd. Monthly test reports are required, on forms provided by the breed organizations. These organizations compute the records.

ADVANCED REGISTRY (AR)

Advanced Registry is the oldest form of official testing, dating back to the 1890's. It provides for the testing of selected registered cows in the herd under stringent rules. Because of its relatively high cost to the herd owner, it is declining in popularity and has been discontinued by the Ayrshire breed.

Check Testing or Surprise Testing

Extra tests, particularly unanticipated or surprise tests, can do much to establish public confidence in production records. Consequently, surprise testing has long been practiced in the supervision of official testing work. In AR and HIR testing, extra surprise tests are usually conducted at the request of the breed organization, although the State Superintendent of

Official Testing may order them also. Whenever possible, such extra tests should be conducted by a different supervisor than the one who regularly makes tests in the herd.

The DHIR rules provide that cows and herds shall receive additional surprise tests if they exceed certain production levels. Such cows and herds are identified by the Central Processing Laboratory, which notifies the appropriate State Extension dairyman, who arranges for the tests to be conducted.

Entering Herds on Test

The herd owner must apply, on forms provided by the breed organization, to place his herd or cows on official test. Upon receipt of an application and fee from the herd owner, the breed organization issues a "Permit to Test", sending copies to the herd owner and to the appropriate state official. A copy of each DHIR permit is also sent to the proper Central Processing Laboratory.

Not until the "Permit to Test" is issued by the breed organization is a herd actually enrolled in an official testing program.

Relationships of Colleges and Breed Organizations

The cooperative relationship between the Land Grant Colleges and the breed organizations in the supervision of official testing work dates back beyond the turn of the century, when some forward-looking members of the college faculties realized the possibilities for dairy cattle improvement through such an arrangement. As early as 1894 faculty members of 20 Land Grant Colleges were actively engaged in supervising official testing work.

The relationship between the colleges and breed organizations has always been rather informal and has been mutually beneficial. As a partial reimbursement to the colleges, the breed organizations have permitted college owned cows to be officially tested at reduced fees. The breed organizations have regularly provided the colleges with a great deal of material for research purposes.

Each college usually sets its own scale of official testing fees. Besides monthly fees to pay the official

tester, herd or per cow fees are usually set high enough to defray all expense of supervising this program. The breeder pays all fees.

The college designates a member of its staff as the Superintendent of Official Testing to supervise official testing in the State. The breed organizations look to him for information on official testing problems. In recent years, the person designated as Superintendent of Official Testing has usually been a State Extension dairyman who also has some responsibility for the DHIA program.

The Superintendent of Official Testing enforces the official testing rules in herds enrolled in such programs. He reports rule violations to the appropriate breed organization, so that disciplinary action may be undertaken, if justified by the facts.

The Superintendent of Official Testing also schedules surprise tests of herds and cows and is responsible for approving AR and HIR testers' reports.

The breed organizations process applications to place herds or cows on official test, issue permits to test, and notify the State Superintendent of any changes in the official testing rules. They publish and regulate the official production records. They also initiate publicity releases giving recognition to high lactation records or high herd averages.

It is also the breed organization's responsibility to initiate disciplinary action against any breeder guilty of rule violations. Such action is usually undertaken only after a full report has been received from the Superintendent of Official Testing, and the breed organization often carries out a supplementary investigation.

To protect colleges against loss of testing fees because of the owner's failure to pay, the breed organizations guarantee the payment of not more than 3 months' fees in AR and HIR testing. If the college cannot collect from the owner, the breed organizations guarantee payment of fees for extra tests required under the DHIR rules, but do not guarantee payment of regular DHIA testing fees.

The breed organizations do not employ any official testing supervisors. These people are employed directly by the colleges or by local testing organizations and are approved for official testing work. In either case these people are responsible to the State Superintendent of Official Testing while they are engaged in testing herds or cows that are on official test. They look to him to interpret the rules, and they submit their reports to him. The Superintendent approves the reports and forwards them to the appropriate breed organization.

In recognition of this well established chain of responsibility, the breed organizations do not deal directly with the official testing supervisors. To do so would divide authority and would seriously undermine the organizational structure of the entire program.

Close cooperation between the breed organizations and the State Superintendent of Official Testing is vital to the successful conduct of the official testing programs. Without such a relationship the programs could not have achieved their present success and respect.

Forms Used

Each of the breed organizations uses a number of questionnaires and form letters. They mail most of these directly to the herd owner, either to convey information to him or to obtain specific information from him.

Table 8, page 33, includes most of the official testing forms with which the Superintendent of Official Testing would normally become involved.

Addresses of Purebred Dairy Cattle Association and dairy breed organizations:

The Purebred Dairy Cattle Association
Karl B. Musser, Secretary
Peterborough, New Hampshire

The Ayrshire Breeders' Association
Brandon, Vermont

The Brown Swiss Cattle Breeders' Association
Beloit, Wisconsin

The American Guernsey Cattle Club
Peterborough, New Hampshire

The Holstein-Friesian Association of America
Brattleboro, Vermont

The American Jersey Cattle Club
1521 E. Broad Street
Columbus 5, Ohio

V. FILING SYSTEM FOR PRODUCTION TESTING

A complete and adequate filing system is necessary in a dairy recordkeeping program if the data is to be of maximum use to the Extension dairy specialist. Following is a suggested outline for filing all material related to the development, supervision and use of a production testing program. County agricultural agents will need a filing system somewhat abbreviated from the one presented here.

Correspondence File

Alphabetical File.—For general correspondence.

Supervisor File.—Folder for each supervisor in alphabetical order.

Special File.—Folders for breed associations, Dairy Cattle Research Branch, USDA, firms and others with which considerable business is transacted.

Association File

A file should be maintained for each association, set up alphabetically, for miscellaneous materials relating to association activities, such as financial statements, annual meeting program and activities, and association summaries.

A visible card file with a card for each association summarizing developments, changes and accomplishments is always helpful for quick reference information on an individual association. This card file can include such things as date organized, date incorporated, counties or area covered, testers employed, herds and cows on test each year, yearly average production, feed consumption, feed cost and return over feed cost for the association, high herd each year, number herds at different levels of production, and any other association summaries desired.

USDA-DHIA Sire Summary

Production Testing Summaries and Reports File

DHIA

- A. Memorandum of Understanding. (Federal, State, Processing Center, Association).
- B. Supplies—forms used.
- C. Eartag orders and distribution.
- D. Herds and cows on DHIA by years. (Summaries and reports to USDA).
- E. 305-day lactation record summaries.
- F. Yearly or annual reports.
- G. Production and feed summaries by years.
- H. Lifetime production.
- I. Others according to preference.

Owner-Sampler.—File set up for information desired relating to this program, following system for DHIA file.

WADAM.—File set up for information desired relating to this program, following system for DHIA file.

DHIR.—File set up for information desired relating to this program, following system for DHIA file.

Individual Herd File

A visible card file with a card for each herd on each type of test is a good way to keep a complete and current record on each herd on test. Complete information on any herd can be secured quickly and easily for use in a dairy Extension program. This card file can include such things as date started testing, center date, breed of herd, herd code number, owner's name and address, farm name, discontinued test and reason, county and association, yearly herd average.

Supervisor's Training Course File

Class Schedules for Course

Applications for Training Course

- A. Past
- B. Current

Enrollment Records—This would include enrollment and rating of work for those attending course.

Subject Matter and Instruction Notes.

- A. Organization and operation of a DHIA
- B. Value of production records
- C. Rules and regulations
- D. Centering system
- E. Weighing and sampling milk
- F. Butterfat testing
- G. Central machine-processing system
- H. Barn-book problems
- I. Herd-book problems
- J. Identification
- K. Sire summary
- L. Owner-Sampler program
- M. WADAM program
- N. Breed association testing programs (HIR and DHIR)
- O. Examinations
- P. Other desired or preferred

Records File

Filed by Breeds and Year.

Forms and Materials File

Set up a numbering system giving a number to each form prepared. Number forms consecutively and do not duplicate. File numerically.

Special Events File

DHIA Workshops and Conferences.—By years with a copy of material presented.

DHIA Supervisor's Contest.—By years with score sheets, winners and scores.

DHIA Members' Contest.—By years with score sheets, winners and scores.

Newsletters to DHIA Supervisors.

Newsletters to DHIA Members.

Special Studies File (Optional)

Can be used for any special studies, summaries, or surveys made from production testing data or information. Examples: comparison of milk shipments and DHIA totals, reasons cows leave DHIA herds, DHIA cows by breeds, effect of herd size on level of production.

Card Files

Herd Code Number Assignments—Set up by counties and type of test.

Personal Data on Supervisors—This card file can summarize information such as name, address, age, qualifications, training, training course results, employment record. A 5 x 8 card or the visible card file can be used for this very satisfactorily. The visible card file is preferred.

Yearly Reports

- A. DHIA 780 cards (hand-calculated).
 1. Current year by associations, for accumulating yearly records to forward to USDA.
 2. Processed cards by years.
- B. Yearly herd summaries (machine-processed) by years received from processing center if special studies are to be made.

Lactation Records

- A. DHIA 718 (hand-calculated).
 1. Current month—accumulate for shipping to USDA.
 2. By years if to be used for special studies.
- B. DHIA 1095 (machine-calculated), by years if to be used for yearly summaries or special studies.

This outline gives only the basic needs for handling and utilizing production testing data easily and efficiently. Revisions, changes and additions can be made to fit the desires and needs of the dairy specialist and office arrangements and facilities.

VI. MAINTAINING A HIGH QUALITY PROGRAM

Everyone working in the National Cooperative Dairy Herd Improvement Program can increase the value of recordkeeping programs by maintaining high quality performance.

Thorough understanding of the principles involved requires continuous effort on the part of extension workers. You as an extension worker must keep cooperating members, boards of directors, and DHIA supervisors informed. Use leader training conferences and workshops, membership meetings, newsletters, circulars, field supervision and personal correspondence.

Several States have developed standards for approval of DHIA supervisors, which must be met and maintained. Some States require that they be licensed.

Why are Accurate Records Important?

On most farms, a recordkeeping program is primarily for on-the-farm use. The DHIA program is designed to fill such uses. Three plans are available—Standard DHIA, Owner-Sampler, and Weigh-a-Day-a-Month. The private use of any of the three plans can help the dairyman improve his herd and make his dairy enterprise more efficient.

ON THE FARM

- Feeding according to production
- Culling out low producers
- Measuring management practices
- Providing a systematic record of dates
- Selecting herd replacements
- Determining sire's value in the herd
- Making the whole family more interested in the herd
- Selecting brood cows

For these uses, standard procedures are important so that uniform measures can be established and used by the participating dairyman.

Through the years, the Standard DHIA plan has grown in stature from a private record for the dairyman to wide use beyond the individual farm. Some of these uses are given below.

MERCHANDISING AND ADVERTISING

- Private cattle sales and dispersals
- Consignment sales
- Pedigrees
- State and national breed magazine advertising
- Insurance losses—known value and proof of identity
- Sires to AI studs

RECOGNITION AND PUBLICITY

- County monthly newsletters, listing high lactation records
- County annual summaries, listing herd averages and high cows
- State annual summary, butterfat honor list
- State annual summary, high herds by breeds
- Cow conference and State annual summary, production clubs
- Herd certificates, over set minimum fat and milk standards
- Local news articles
- 4-H production contest
- State breed association awards:
 - Proved sires of merit
 - Lifetime production certificates
 - Meritorious brood cow, dam of production, dam of type
 - High cow listings for State meetings

PUBLIC USE

- Evaluation of the recordkeeping program
- Analysis of data, determining which practices pay
- Research use, data provided back to all dairymen
- Evaluation of the artificial insemination program
- Evaluation of sires for artificial insemination program
- Benchmarks of progress in dairying
- Associations serve as vehicle for educational meetings
- Provides direct contact with key farmers and leaders
- Instills desire for improvement of dairying

In dairy herds using only the on-the-farm aspects of recordkeeping, either the Owner-Sampler or Weigh-a-Day-a-Month plans can do the job. However, these plans are not intended for use beyond the individual farm.

Standard DHIA records are effective for the public use phases. Owners of registered herds whose *primary* uses of records include merchandising, advertising, recognition and publicity may be interested in the Dairy Herd Improvement Registry (DHIR) plan, which is provided by each of the national breed associations.

Enforcement of Rules

Standard DHIA rules have been developed from experience and need to make the program uniform throughout the Nation. Standard rules provide a program people can trust. If rules are not followed, people lose faith in the program, and it cheapens the records for all dairymen. Rules prevent chaos and uncertainty, and protect the basic data from being incorrect.

The county and/or State membership organizations are responsible for enforcing rules. Much of the potential misunderstanding involving rules and their enforcement can be prevented by a membership education program. Each member has an obligation in regard to rules enforcement.

The membership agreement should include a statement certifying the member will follow rules and regulations of the program desired. New members should be provided with the appropriate rules. When rules are revised, all members should be provided with a copy. Changes or new requirements should be out-

lined, giving background and reasoning behind the development of such rules.

Supervisors must be properly trained in uniform and fair enforcement procedures, and they need cooperation and understanding from the board of directors. Most rules discrepancies are a result of misunderstanding on the part of the member. The supervisor's work must be conducted in a manner which will enhance the desire for uniform rules acceptance.

Disciplinary Action When Needed

Ordinarily most disciplinary action can be justly handled by the local board. A complete hearing followed by a fair evaluation by a responsible board of directors will usually determine the appropriate action necessary.

Procedures for appeal to the State membership organization are desirable. A review of the circumstances must be made in an unbiased and impartial manner. Appropriate by-laws relating to expulsion or termination of membership must be followed in case of severe violations by members. Contractual obligations must be considered thoroughly in case of supervisor violations.

Equipment

Because of the varying size and scope of association operations, equipment needs must be determined on a local or State basis. Adequate equipment is essential to accurate samples and tests. State laws should be checked for specific requirements, as well as DHIA rules and equipment requirements and butterfat testing procedures outlined in the National Cooperative DHIA Program Handbook.

Source of Supply.—Many areas have local sources of supply adequate for usual needs. A list of national sources of supplies can be secured through the State Extension dairyman.

Accuracy Checks.—All equipment should be checked periodically to insure the association's having usable, accurate equipment. Procedures for checking scales and other weighing and sampling equipment are covered in the DHIA Manual. Centrifuge speed

should be checked at least monthly, with the lid closed. A permanent tachometer is desirable for ease of checking centrifuge speed.

Many States have routinely checked weighing devices, centrifuges, and testing procedures through field supervision and DHIA conferences and workshops. Standardized samples of milk properly preserved and provided to all supervisors will spot problem situations which need follow-up.

Corrections

Incorrect data must be eliminated at the source in order to prevent recurrence. Spot checking of herdbooks can help maintain higher standards of excellence in tabulating and reporting of basic data. A sound membership education program will help maintain complete and accurate records.

Thorough screening of applicants for DHIA training is necessary. Several States use aptitude and proficiency tests to determine capabilities. Sound training in fundamentals of record reporting, computation and recording, followed by frequent conferences, workshops and field supervision provide the basic plan for preventing and eliminating errors.

Analysis of reports, correction letters, herdbook checks will spot problem supervisors needing assistance. It is desirable to instill a pride of accomplishment in superior work. Supervisor ratings on reports will aid in this objective.

Dairy record processing centers have initiated many routines for spotting and checking errors. Prompt handling of communications from the processing center will aid in eliminating and correcting errors.

The Dairy Cattle Research Branch of USDA has initiated screening routines for locating discrepancies in the sire summary program. Questionable records are returned to the States for correction or verification. These corrections should be promptly supplied to provide usable data on the records in question.

VII. EVALUATION

For the National Cooperative Dairy Herd Improvement Program to be effective and make a major contribution to a well executed Extension dairy program, all phases must be periodically evaluated. The very nature of dairy recordkeeping programs leads to easy collection of evidence and analysis of results essential in interpretation of programs related to recordkeeping.

A well executed Extension program includes both long-term and yearly objectives that make maximum use of dairy recordkeeping in dairy development. A review of these objectives and their degree of fulfillment can be made through casual observation, self-evaluation, and simple surveys, as well as through more formal data analysis and interpretation. Findings can be made a part of present and future programs.

Informal Evaluation

Dairy Committees and Extension Councils as well as professional workers in dairying and related fields are very helpful in evaluating a dairy recordkeeping program. These groups would be most helpful in informal evaluations that might include:

1. Effectiveness of teaching objectives.
 - a. Coverage—does the program reach dairymen?
 - b. Are personal skills being developed?
 - c. Has success of recordkeeping programs challenged others to participate?
 - d. Is the program simple yet detailed enough to get the job done?
 - e. Is the program adaptable to changes in conditions or available resources?
 - f. Does the program challenge improvement in dairying?
 - g. Is maximum use being made of demonstration herds as a teaching method?
2. Simple surveys to determine usefulness of recordkeeping.
 - a. Which farmers use recordkeeping programs?
 - b. Who gets farmers to join?
 - c. Why do farmers join?
 - d. Why do farmers use Owner-Sampler testing when DHIA is available, or WADAM testing when

Owner-Sampler is available?

- e. Why do farmers discontinue testing?
- f. What are the major uses farmers make of records?
- g. Does it pay to belong to a testing program?

Formal Evaluation

The large volume of data collected in all recordkeeping programs offers the extension worker a way to measure results of approved practices and make program changes leading to faster and more efficient dairy management. This data offers the research worker a chance to seek basic truth from applied practice. Geneticists can find sires and cow families with the demonstrated ability to transmit high genetic production potential. Data from recordkeeping programs can be analyzed to build more effective programs. Some areas most useful to the Extension worker might be:

1. USDA-DHIA Sire Summary.
2. State and association sire analysis.
3. Yearly improvement in herd average production.
4. Relation of production to income over feed cost.
5. Relation of feed level to production level and income.
6. Relation of forage intake to production and income.
7. Relation of grain feeding to production and income.
8. Relation of energy intake to production and income.
9. Effect of season of calving on production and income.
10. Effect of length of dry period on production and income.
11. Effect of age at first calving to lifetime production and income.
12. Effect of size of herd on production and income.
13. Association, county, and State statistics by years.
14. Evaluation of artificial breeding results as means of spreading superior genetic merit to the dairy cow population.

Appendix I

Table 1. Herd Record Books and Forms (Hand Calculated)

Item	Source	Distribution	Use
HERD RECORD BOOKS Multiple-Ring Cover 12'' x 18''	Wire-O Sales Co., Inc., Pough- keepsie, New York.	By State Extension dairymen to county DHIA organizations.	Bonafide active DHIA members.
HERD BOOK FILLERS DHIA-1 Cover Page DHIA-5 Grain Feed- ing Tables DHIA-10 Miscellane- ous Tables DHIA-20 Register of Supervi- sors DHIA-30 Herd Im- provement through Breeding	Dairy Cattle Re- search Branch to State Extension dairymen.	.....do.....	do.
SPECIAL PAGES DHIA-12 Monthly Herd Summary DHIA-14 Ten Year Herd Summary DHIA-16 Register of Animals DHIA-21 Yearly Index	.....do.....	.....do.....	To record and summarize monthly and yearly herd totals and aver- ages. To record annual progress in pro- duction, cow disposals, high cows, etc. Identification, index, dates entered and left herd. Index of cows on test, summary of yearly production of cows on test.
INDIVIDUAL COW PAGES (Lifetime Record of Individ- ual Cow) DHIA-22 4 year DHIA-22A 6 year	.....do.....	.....do.....	To record complete identification, production and reproduction data for each cow in the herd.
BARN BOOKS DHIA-2 DHIA-2A	.....do.....	.....do.....	Workbook for DHIA supervisors to record test day data and calculate monthly credits.
DHIA-4 MONTHLY ASSOCIATION SUM- MARY	.....do.....	.....do.....	By DHIA supervisor to summarize the herds in his association.

(Table 1 continued on next page.)

Item	Source	Distribution	Use
DHIA-1108 HERD OWNER CARD	.....do.....	Used in State offices.	In State office for establishment of an alphabetical file of herd owners.
REPORTING FORMS DHIA-780 Yearly Herd Summary.	.....do.....	By State Extension dairyman to county DHIA organizations usually via county agricultural agent or DHIA Supervisor.	Used by DHIA supervisors to report yearly herd totals and averages on individual herds at the end of each testing year. Completed DHIA-780 reports are sent to State Extension dairyman, either directly from DHIA supervisor or through the county agricultural agent. The State Extension dairyman will use these reports for State and county association summaries, etc. He in turn will forward the DHIA-780's to the Dairy Cattle Research Branch on or before June 1 for the year ending April 30.
DHIA-718 DHIA Production Report.	.....do.....	.....do.....	Completed by DHIA supervisor for each first 305-day lactation. Reports are sent to State Extension dairyman either directly from DHIA supervisor or through county agricultural agent. Extension dairyman forwards to the Dairy Cattle Research Branch for use in the National Sire Summary Program.

Table 2. Herd Record Books and Forms (Automated Data Processing)*

Item	Source	Distribution	Use
HERD BOOKS Multiple-Ring Cover 12'' x 15'' Multiple-Ring Cover 11'' x 8½''	Wire-O Sales Corporation, Poughkeepsie, New York	By State Extension dairyman to county DHIA organization.	Bonafide active DHIA members file Monthly Reports, Individual Cow Pages—DHIA 1057, Register of Animals, etc.
HERD BOOK DIVIDERS DHIA 50 DHIA 51 DHIA 52	Dairy Cattle Research Branch	.....do.....	For use in herd books of dairyman.
HERD BOOK FILLERS.	Individual States	.....do.....	Special directions, tables, use o records material.
HERD BOOK FORMS Monthly Report Register of Animals— DHIA-16 Lifetime Record of Indi- vidual Cow—DHIA 1057, Permanent Herd Record Page.	Regional or State Dairy Records Processing Laboratory Dairy Cattle Re- search Branch do.....	Mailed by regional or State Dairy Records Processing Laboratory to each member. State Extension dairyman to county DHIA organiza- tion. do.....	Report to herd owner of test day results, current summary on indi- vidual cows and herd. Copy to State Extension dairyman and/or county agricultural agent. Record identification and indexing of all animals entering herd by birth or purchase. Record identification, lactation pro- duction summary and reproduc- tion of each individual cow.
BARN SHEET	Regional or State Dairy Records Processing Laboratory.	Regional or State Dairy Records Processing Laboratory.	Form for DHIA supervisor to report test day data to Dairy Records Processing Laboratories.
COW IDENTIFICA- TION AND TRAN- SITION REPORT.	.....do.....	Through State Ex- tension dairymen to county DHIA.	Transfer herds from hand calculated or start new herds on Automated Data Processing.

*States doing their own processing have considerable variation in their herd books and forms. There is also some variation among the regional Dairy Records Processing Laboratories.

Table 3. Reports from Dairy Records Processing Laboratories*

Item	Source	Distribution	Use
305-DAY LACTATION RECORDS Each Month—cards or tape.	Dairy Cattle Research Branch.	Dairy Records Processing Laboratory to Dairy Cattle Research Branch and State Extension dairyman.	Basis of National Sire Summary Program.
YEARLY HERD SUMMARIES April 30 or end of county fiscal year.	Dairy Records Processing Laboratory.	.....do.....	Report of individual herd averages to Dairy Cattle Research Branch and cooperating States. Basis of national, State and county averages.
DHIR REPORT—PDCA FORM 1. Each month	PDCA	Dairy Records Processing Laboratory to each breed association.	Report of first 305-day and complete lactation records.
LIST OF COMPLETED DHIR LACTATION RECORDS.	Dairy Records Processing Laboratory.	Herd owner, State Extension dairyman, breed association.	Visual check on completed records.
MONTHLY REPORT	.....do.....	State Extension dairyman, county agricultural agent, State or county DHIA organization.	1. List of herds processed each month, with daily averages, number of cows, etc. 2. Basis of billing.
STATE AND COUNTY ASSOCIATION SUMMARIES	Dairy Records Processing Laboratory.	To State Extension dairyman on scheduled dates.	1. Summarize yearly averages by counties and State. 2. Distributed to county agricultural agents by State Extension dairyman.
LACTATION LISTING	.....do.....	To State Extension dairyman or county agricultural agent.	305-day lactation records completed previous month, county publicity, etc.

*Kind and number of reports issued varies among processing centers. Complete list can be obtained from the processing laboratory.

Table 4. Bulletins, Manuals, Correction Forms, Record Use Forms, for Automated Data Processing*

Item	Source	Distribution	Use
INDIVIDUAL COW DATA CORRECTION.	Dairy Records Processing Laboratory.	To county DHIA organizations.	To correct lactation to date and identification due to reporting errors.
HERD FEED PRICE DATA CORRECTION.	.....do.....	.....do.....	To correct herd data due to errors in reporting.
A.D.P.—DHIA—MANUAL.	Dairy Records Processing Laboratory.	To State Extension dairyman and DHIA supervisors.	Directions for reporting test day data and completing Herd Record Books.
STABLE BREEDING DATA CHART OR BARN INFORMATION RECORD.	State Extension dairyman.	To county DHIA organization.	Place for owner to record essential dates, events, etc. and make them available to DHIA supervisor.
NATIONAL COOPERATIVE DHIA PROGRAM HANDBOOK FOR EXTENSION WORKERS.	Federal Extension Service.	Through State Extension dairyman to county agents and DHIA supervisors.	Directions for general DHIA program.
MEMBER WORKBOOKS.	State Extension dairyman.	To county agricultural agents, DHIA supervisors, members.	How to interpret and use DHIA records.
CLIP BOARD	.....do.....	County DHIA organizations.	Holder for Barn Sheets and handy reference material.
FORAGE CODING CHARTS.	.....do.....	.....do.....	By DHIA supervisors.

* Varies with each processing laboratory. Complete list is available from each laboratory.

Table 5. Reports Required by Other Government Agencies

Report	Required by	Prepared by	Due
INTERNAL REVENUE 990 Report of Tax Exempt Co- operatives.	District Office, Federal Director of Internal Revenue.	County association secretary, treasurer or bookkeeper, or by State organiza- tion.	4½ months after close of fiscal year.
INTERNAL REVENUE 941 Quarterly Social Security and Income Tax.	.....do.....	.....do.....	April 30, July 31, Oct. 31 and Jan. 31.
INTERNAL REVENUE W-2 Employers Report of Taxes Withheld.	.....do.....	.....do.....	January 31.
STATE AND COUNTY TAXES (if any).	Check State laws.	.....do.....	Varies with States.
FINANCIAL	Necessary for satisfac- tory association oper- ation. Check State laws.	.....do.....	Each month and end of fiscal year.
FARM COOPERATIVE	Check State laws.	.....do.....	Check State laws.

Table 6. Insurance and Other Group Benefits

Kind	Required By	Paid By	Purpose
WORKMEN'S COMPENSATION.	Most States	State or county organization.	Protects worker against injuries or death while on the job and where injury or death can be construed as the result of being on the job.
WORKMEN'S DISABILITY BENEFITS.	Some States, optional in others.	.....do.....	Protects worker against loss of income as result of sickness or injury not connected with job.
UNEMPLOYMENT	Not required or optional in most States.	.....do.....	Protects worker against loss of income due to loss of job or layoff.
SOCIAL SECURITY (FICA).	Federal law	Employer pays one-half; Employee pays one-half.	Old age benefits.
GENERAL LIABILITY	State laws vary	State or county organizations.	Protects association against bodily injury or property damage claims except automotive.
BONDING	Cooperative law requires bonding of certain officers and employees.	.....do.....	Protects association against loss of funds due to fraud, mishandling, etc.
AUTOMOBILE Non-ownership fleet policy.	Required in most States, desirable.	.....do.....	Protects against damage claims resulting from automobile accidents.
GROUP INSURANCE Health, Accident, Blue Cross and Blue Shield.	Optional in most States, but highly desirable.	Costs usually shared by employer and employee.	Protects worker and family against high medical and hospital expenses.

Table 7. Membership Records and Organization

Item	Source	Distribution	Use
MEMBERSHIP APPLICATION.	State or county membership organization.	County DHIA organization.	Sign up new members. May become membership certificate when approved by organization.
NEW MEMBER REPORT.	.....do.....	.....do.....	Source document for permanent membership files.
CERTIFICATE OF MEMBERSHIP.	.....do.....	.....do.....	Owner's evidence of membership.
FINANCIAL RECEIPT	.....do.....	.....do.....	Used by DHIA supervisor as evidence of fees collected from members. One copy to member, one to association secretary, and one copy retained by supervisor.
SUPERVISOR'S MONTHLY REPORT	State Extension dairyman or State membership organization.	.....do.....	Completed by DHIA supervisor each month to show herds tested, monthly averages, financial summary, etc. Copies are sent to association secretary, county agricultural agent and State Extension dairyman.
CONSTITUTION AND BY-LAWS.	Know State cooperative laws.	Adopted by State and county organizations.	Basis for business and legal operation of State and county DHIA organizations.

Table 8. Forms Used In Official Testing

Form	Source	Distribution
GENERAL Unified Rules for Official Testing.	Purebred Dairy Cattle Association, Karl B. Musser, Secretary, Peterborough, N.H.	To anyone, upon request.
DHIR FORMS Application to Enter Herds on DHIR Test. Permit to Test-DHIR	Breed Organization.....do.....	Upon request, to Superintendents of Official Testing, herd owners, others. To owner of accepted herd, to Superintendent of Official Testing in State, to processing laboratory concerned.

(Table 8 continued on next page.)

Form	Source	Distribution
Yearly Herd or Lactation Average Certificate. Lactation Report Card	.....do..... PDCA	To owner of herd at close of testing year. (Not issued by Brown Swiss.) Used by processing laboratories to report 305-day and completed records to breed organizations.
HIR FORMS Application to Enter Herds on HIR Test. Permit to Test—HIR Supervisor's Monthly Report Certificate of Milk-O-Meter Accuracy (Holstein only). Report of Lactation Records or Lactation Certificate. Yearly Herd or Lactation Average Certificate.	Breed Organization.....do..... .....do..... .....do..... .....do..... .....do.....	Upon request, to Superintendents of Official Testing, herd owners, others. To owner of accepted herd and to Superintendent of Official Testing in State. Prelisted report forms are mailed each month to herd owner. To Superintendents of Official Testing for use by testing supervisors in Holstein herds using Milk-O-Meters. To herd owner when records of cows are completed. To owner of herd at close of testing year. (Not issued by Brown Swiss.)
AR FORMS—(Not used by Ayrshire). Application to Enter Cows on AR Test. Permit to Test—AR Supervisor's Report for AR (Form PDCA-T2). Report of Milk Production (Monthly). Report of AR Credits Calving Statement Lactation Certificate	.....do..... .....do..... PDCA or Guernsey..... Breed Organization..... .....do..... .....do..... .....do.....	Upon request, to Superintendents of Official Testing, herd owners, others. To owner of accepted cow and to Superintendent of Official Testing in State. To Superintendent of Official Testing for testing supervisor's use. (Guernsey has own form.) To owner of cow and others, on request. (Not used by Jersey.) To owner of cow, monthly or periodically. To owner of cow, for reporting calving data to breed organization. To owner of cow, at completion of record.

Appendix II

Memorandum of understanding between the Cooperative Extension Service of the-----
and the Federal Extension Service and the Animal Husbandry Research Division, Agricultural
Research Service, United States Department of Agriculture, relating to the National Cooperative
Dairy Herd Improvement and Sire Proving Programs

The Cooperative Extension Service of the-----,
hereinafter referred to as the Agency, the Federal Extension Service, hereinafter referred to as the
Service, and the Animal Husbandry Research Division, hereinafter referred to as the Division, recog-
nizing that cooperation is a matter of working together toward a common end and is not merely one
of cooperative financing, desire to enter into this memorandum of understanding for conducting work
on the National Cooperative Dairy Herd Improvement and Sire Proving Programs.

Participation in this cooperation on the part of the Division is under authority included in the
Act establishing the Department of Agriculture, the Department of Agriculture Organic Act of 1944,
and the annual appropriation Acts providing funds for the activities of the Division. Participation
by the Agency shall be in accordance with applicable laws.

The National Cooperative Dairy Herd Improvement and Sire Proving Programs, sponsored by
the parties to this agreement, are cooperative undertakings between dairymen, county, State and the
Service, and the Division. The National Cooperative Dairy Herd Improvement Program consists of
four production recordkeeping plans: Standard Dairy Herd Improvement Association, Dairy Herd
Improvement Registry Plan (in cooperation with the various breed registry organizations), Owner-
Sampler Plan and Weigh-a-Day-a-Month Plan. These plans are conducted on a national basis under
the general supervision of the Animal Husbandry Research Division, Agricultural Research Service,
USDA. The responsible supervising agency in each State is the Cooperative Extension Service. Par-
ticipating dairymen are organized into State and county cooperatives or associations that have certain
responsibilities delegated to them by the supervising agency.

The National Cooperative Dairy Herd Improvement and Sire Proving Programs as they have
been developed in the United States, have been effective educational methods to promote higher pro-
duction per cow and more effective management of dairy cattle. The results of this improvement
are demonstrated by the fact that all Standard Dairy Herd Improvement Association herds averaged
10,327 pounds of milk and 401 pounds of butterfat in 1959, compared to the National average of
6,438 pounds of milk and 256 pounds of butterfat. The program has grown to the point where more
than 66,000 cooperating dairymen are keeping dairy production records at their own expense on more
than 2½ million cows in 50 States and Puerto Rico.

I. Purposes:

- A. To improve the producing ability of dairy cattle by providing guides for breeding, feeding, and management practices.
- B. To provide information by which it is possible to measure the transmitting abilities of dairy sires to the end that the meritoriously proved sires can be selected for breeding purposes.
- C. To improve the efficiency and financial position of all dairymen.
- D. To provide data for dairy extension workers in developing and conducting effective educational demonstrations and programs.
- E. To provide data for research.

II. Objectives:

- A. To maintain a uniform system of recordkeeping to guide the cooperating dairymen in their herd improvement program and to supply reliable records and herd improvement information to the

Division, the agricultural colleges, and the county, State, and the Service for scientific studies, result demonstrations, and other educational programs.

B. To establish sources of superior dairy inheritance as a means of improving the producing ability of all dairy cattle.

C. To maintain a high standard of integrity in the above recordkeeping system that will give reliability to scientific studies and educational demonstrations; provide authentic information to dairymen who use these records as a basis of breeding, sire selection, feeding and management; and provide accurate factual information on production, feed costs, reproduction and other herd data.

D. To summarize, analyze and publish Standard Dairy Herd Improvement Association results and make them available to all research, educational, and extension workers; cooperating dairymen; and others. No copyright shall subsist in the material published pursuant hereto.

E. To demonstrate the fundamentals of dairy herd improvement to the cooperating dairymen and through the use of the results of this demonstration to teach all interested dairymen of the Nation the value of these practices.

III. The Agency will:

A. Assume responsibility for the development and guidance of the National Cooperative Dairy Herd Improvement Program and adaptation of the details of the program to fit the State needs.

B. Conduct a program to keep as many cows as possible on production testing with adequate supervision.

C. Through the State dairy extension specialists, be responsible for:

1. General supervision of the National Cooperative Dairy Herd Improvement Program in the State.

2. Distribution of all record forms, including the report forms provided by the Division which may be needed by the State.

3. Assembling and forwarding to the Division production records of all herds enrolled in Owner-Sampler and Weigh-a-Day-a-Month record plans and lactation and herd records of all Standard Dairy Herd Improvement Association cows for use in proving sires and other analyses.

4. Summarization and analysis of Dairy Herd Improvement results not supplied by the Division.

5. Making the published results available to county agricultural agents, other extension workers, and other interested parties.

6. Assisting county agricultural agents in the organization, development, and supervision of the National Cooperative Dairy Herd Improvement Program.

7. Training of Dairy Herd Improvement Association supervisors, county agricultural agents and other personnel working on the program.

D. Through the county agent or other authorized person, be responsible for:

1. General supervision of the National Cooperative Dairy Herd Improvement Program in the county.

2. Distribution of recordkeeping forms and information to cooperating dairymen in the county.

3. Collection of necessary reports and forwarding them to the dairy specialist in charge at the State office.

4. Establishing and maintaining a responsible membership organization for the conduct of the National Cooperative Dairy Herd Improvement Program.

5. Returning to the membership the summaries and results of the testing work.

IV. The Division will:

A. Furnish the Agency the necessary uniform lactation and herd report forms (except EDPM monthly report and State adapted forms) needed to provide essential information for the dairymen and data for research analysis, extension teaching, and sire proving.

B. Conduct a sire proving program based on data received from the Agency and publish the results thereof. Make available sire data for further study and extension use in dairy cattle improvement.

C. Compile summary information on a regional and national basis on all types of dairy production recordkeeping and analyze Standard Dairy Herd Improvement Association production, feed, and cost

data from data received from the Agency to show the value of various dairy practices and make these results available to the Agency for extension teaching.

D. Assist in coordinating the State Dairy Herd Improvement programs with the National program.

E. Conduct research on the various aspects of the program to assure an efficient and economical operation.

F. Furnish an annual report of record forms and other pertinent statistical data to the director of the Agency.

V. It is mutually agreed that:

A. The Agency which will be represented by the Dairy Records Committee of the American Dairy Science Association and the Division, working through the American Dairy Science Association, shall establish uniform rules and policies for conducting the Dairy Herd Improvement and Sire Proving Programs.

B. The Agency and the Division will consult in the interest of effective cooperation and coordination with respect to all phases of the Dairy Herd Improvement and Sire Proving Programs.

C. A representative of the Service will serve as a liaison between the Agency, the Division and the Extension Committee on Organization and Policy.

D. The Agency and the Division will cooperate in establishing and maintaining Dairy Records Processing Laboratories and collaborate on other regional or national activities to improve the effectiveness of the Dairy Herd Improvement and Sire Proving Programs.

E. The Agency and the Division will pay the salaries and expenses of their respective employees assigned to this work.

VI. This memorandum of understanding is to define in general terms the basis on which the parties concerned will cooperate and does not constitute a financial obligation to serve as a basis for expenditures. Each party will handle and expend its own funds. Any and all expenditures by the Division made in conformity with the plans outlined in this memorandum of understanding must be in accord with Department rules and regulations, and in each instance based upon appropriate finance papers, such as lease, contract, requisition, letter of authorization, etc. Expenditures made by the Agency will be in accord with its governing rules and regulations.

VII. The responsibilities assumed by each of the cooperating parties are contingent upon funds being available from which expenditures legally may be made.

Funds of the Agency shall not be expended by any employee of the Division.

VIII. No member of, or delegate to Congress or resident commissioner, and no officer, agent, or employee of the Government shall be admitted to any share or part of this agreement or to any benefit to arise therefrom.

IX. This memorandum of understanding shall become effective when fully executed. It shall continue in effect indefinitely but may be modified or terminated at the request of either party. Requests for termination or any major modification shall be submitted to the other party for consideration not less than six (6) months in advance of the effective date of such termination or change.

X. Nothing herein shall be construed as interfering in any way with the basic responsibilities and activities of either party.

Date

*Director, Cooperative Extension Service
of the*-----

Date

*Administrator,
Agricultural Research Service,
United States Department of Agriculture.*

Date

*Administrator,
Federal Extension Service,
United States Department of Agriculture.*